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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/508,512	03/24/2000	ROBERT ARTHUR HENRY EDWARDS	REF/EDWARDS/	3037
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BACON & THOMAS 625 SLATERS LANE 4TH FLOOR ALEXANDRIA, VA 22314		EXAMINER CROSS, LATOYA I		
		ART UNIT 1743		PAPER NUMBER

DATE MAILED: 06/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/508,512

Applicant(s)

EDWARDS ET AL.

Examiner

LaToya I. Cross

Art Unit

1743

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 April 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 42-77 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 42-52, 57, 59-63, 65-73, 76 and 77 is/are rejected.
- 7) ☒ Claim(s) 53-56, 58, 64, 74 and 75 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

This Office Action is in response to Applicants' amendments filed on April 19, 2005. Claims 42-77 are pending.

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 42-52, 57, 60-64, 66-73, 76 and 77 are rejected under 35 U.S.C. 103(a) as being unpatentable over Atomic Energy (GB patent 1,092,797) in view of US patent 4,019,864 to Saito et al or US patent 5,080,693 to Bourne et al.

Atomic Energy discloses detection of tritium in air and vapors. The reference discloses the use of a plastic phosphor scintillation material for good light collection efficiency. See page 3, lines 1-5 and 52-60. With respect to the inlet/outlet ports Atomic Energy '797 discloses a preferred embodiment comprising a detector cell having inlet and outlet parts, as well as optically clear windows (page 2, lines 68-96). Specifically, Atomic Energy discloses that the scintillator (20) is disposed within gas and liquid tight container (10). The container has an inlet port (13) and an outlet port (14), as recited in claims 24 and 26. Figure 4 of the reference shows pump (51) used to move air (tritium containing sample) to the detector cell and in contact with the scintillator, as recited in claim 46. This allows efficient detection of tritium by allowing pure gases to flow inward and outward. For measuring, Atomic Energy '797 discloses using photomultiplier tubes that are fed through amplifiers, which in turn feed rate meter circuits and recording meters. The reference discloses that the air pump draws air into

the inlet and pass the scintillator. Scintillation light is piped to the windows which are juxtaposed to the photomultiplier tubes. The tubes are energized and the outputs are fed through amplifiers to a circuit and an indicating or recording meter (page 4, lines 94-115).

Further, the reference discloses plastic phosphors as scintillator materials for measuring tritium.

Atomic Energy differs from the instantly claimed invention in that there is no disclosure of a hygroscopic material on the scintillator element.

Both Saito et al and Bourne et al teach that tritium can be collected by being absorbed on an absorbent material, such as silica gel or zirconium alloy getters. Both references teach that in monitoring tritium in air, the water content in air is absorbed by the absorbent, followed with measuring the radioactivity by scintillation counting. See col. 1, lines 58-68 of Saito et al and col. 1, lines 59-68, col. 3, lines 24-43 of Bourne et al.

It would have been obvious to one of ordinary skill in the art to incorporate a hygroscopic material, such as silica gel or zirconium alloy, to the scintillator element of Atomic Energy to allow any tritium in the air to be absorbed onto the scintillator element. Such would assure that tritium is effectively collected and assure that the measurement is accurate.

3. Claim 59 is rejected under 35 U.S.C. 103(a) as being unpatentable over Atomic Energy and Saito et al or Bourne et al as applied to claims 42-52, 57, 60-64, 66-73, 76 and 77 above, and further in view of US patent 5,166,073 to Lefkowitz et al.

Neither Atomic Energy nor Saito et al or Bourne et al disclose zinc sulfide as a scintillator element.

Zinc sulfide is also a known scintillation material for measuring tritium, as taught by Lefkowitz et al (col. 3, lines 24-25 and col. 5, lines 19-28). It would have been obvious to one of ordinary skill in the art to substitute the scintillator of Atomic Energy (plastic phosphor) with zinc sulfide because due to its known ability to effectively monitor tritium in air.

4. Claim 65 is rejected under 35 U.S.C. 103(a) as being unpatentable over Atomic Energy and Saito et al or Bourne et al as applied to claims 42-52, 57, 60-64, 66-73, 76 and 77 above, and further in view of US Patent 3,945,797 to Mlinko et al.

Neither Atomic Energy nor Saito et al or Bourne et al disclose the addition of zeolite in the scintillator.

Mlinko et al teaches a method for measuring tritium isotopes. The method involves contacting tritiated water with a contact catalyst on an aluminum oxide substrate. The contact catalyst is responsible for absorbing the tritiated water. Mlinko et al teaches that zeolites are suitable for due to their ability to readily absorb water allow the tritium to firmly bond to it (col. 4, line 62 – col. 5, line 20).

It would have been obvious to one of ordinary skill in the art to incorporate a zeolite into the scintillator of Atomic Energy to help absorb tritiated water and aid in the contact of tritium in the sample with the scintillator.

Allowable Subject Matter

5. Claims 53-56, 58, 64, 74-75 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art of record fails to teach or suggest zinc chloride, potassium acetate, phosphoric acid or lithium chloride as a layer formed on a solid scintillator material, as recited in claim 64. With respect to claims 53, 54, 74 and 75, the prior art of record fails to teach or suggest a non-discriminating monitor in addition to the first scintillator. Further, with respect to claims 55 and 56, the prior art of record fails to teach a second sealed radiation monitor to account for background radiation field or the incorporation of the scintillator into a breathing mask (claim 58).

Response to Arguments

6. Applicant's arguments filed April 19, 2005 have been fully considered but they are not persuasive. With respect to the obviousness rejection over Atomic Energy in view of Saito or Bourne, Applicants' argue that there is no motivation to combine Atomic Energy with Saito or to combine Atomic Energy with Bourne.

The Saito reference teaches that the water content in air can be absorbed by silica

gel so that the collected water can be analyzed for the presence of tritium. The device taught by Saito uses a water absorbing section (20), which is a silica gel material as a means to collect water from an air sample. The Examiner believes that Saito provides sufficient teaching of silica gel as a means for collect water from an air sample, wherein the collected water can be analyzed for tritium. The basis of the obviousness rejection is to modify the device of Atomic Energy by providing a better means for collecting water vapor to be tested. The rejection proffers that it would have been obvious to one of ordinary skill in the art, recognizing that silica gels are a convenient and easy way to collect water vapor, to modify the device of Atomic Energy by incorporating a layer of silica gel (hygroscopic material) to aid in collecting water vapor to be analyzed. Having the layer of hygroscopic material would assure that water vapor is efficiently collected.

The Bourne reference, like Saito, teaches a means for absorbing water from an air stream. Bourne uses zirconium alloy, specifically stating that the zirconium based getters will absorb tritium in any of its common forms. Again, the basis of the obviousness rejection is to modify the device of Atomic Energy by providing a extra means for collecting tritiated water to be tested, wherein the extra means is a material that is known (from Bourne) to be an effective absorber for tritium.

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LaToya I. Cross whose telephone number is 571-272-1256. The examiner can normally be reached on Monday-Friday 8:30 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill A. Warden can be reached on 571-272-1267. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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